

What is claimed is:

Sub B37

1. A frusto-conical interbody spinal fusion implant, comprising:
a body having an insertion end, a trailing end and an outer surface; and
an external thread for engaging said implant to adjacent vertebrae of the spine, the outer locus of said external thread forming a substantially frusto-conical configuration, said implant being made of a material appropriate for human implantation.
2. The implant of claim 1 in which said body has a substantially frusto-conical configuration.
3. The implant of claim 1 in which said body has a substantially cylindrical configuration.
4. The spinal fusion implant of claim 1 in which said trailing end is larger than said insertion end.
5. The spinal fusion implant of claim 1 in which said insertion end is larger than said trailing end.
6. The spinal fusion implant of claim 1 in which said implant comprises a bone ingrowth material.
7. The spinal fusion implant of claim 1 in which said implant comprises a fusion promoting material.
8. The spinal fusion implant of claim 1 in which said implant is at least in part bioabsorbable.
9. The spinal fusion implant of claim 1 having a plurality of openings capable retaining fusion promoting material.
- 10 11. The spinal fusion implant of claim 1 in which said external thread has a thread radius measured from the longitudinal central

axis of said implant, said thread radius being substantially uniform throughout at least a portion of said implant.

11 ~~12~~. The spinal fusion implant of claim 1 in which said external thread has a thread radius measured from the longitudinal central axis of said implant, said thread radius being variable along the length of said implant.

¹²
12 ~~13~~. The spinal fusion implant of claim 1 in which said external thread has a thread height measured from said body which is variable along the length of said implant.

13 ~~14~~. The spinal fusion implant of claim 1 in which said external thread has a thread height measured from said body which is substantially constant along the length of said implant.

14 ~~15~~. The spinal fusion implant of claim 1 in which said outer surface is porous at least in part.

¹⁵
15 ~~16~~. The spinal fusion implant of claim 1 in which said implant has an internal chamber and an access opening for accessing said internal chamber.

16 ~~17~~. The spinal fusion implant of claim 16 in which said internal chamber is capable of containing fusion promoting material.

17 ~~18~~. The spinal fusion implant of claim 16 in which said implant comprises a wall surrounding said internal chamber.

18 ~~19~~. The spinal fusion implant of claim 16 in which said wall has a plurality of openings passing therethrough in communication with said internal chamber.

19 ~~20~~. The spinal fusion implant of claim 16 in which said implant has means for closing said access opening.

- ~~20~~ ²¹ 21. The spinal fusion implant of claim 1 in which said implant includes an engagement means for engaging instrumentation for the insertion of said implant.
- ~~21~~ ²² 22. The spinal fusion implant of claim 1 in which at least a portion of said outer surface comprises wells having at least partial walls.
- ~~22~~ ²³ 23. The spinal fusion implant of claim 1 in which said implant is configured to be placed in close proximity in a side by side alignment to a second spinal fusion implant, said first and second implants when placed together having a combined overall width that is less than the sum of the individual maximum diameters of each of said first and second implants.
- ~~23~~ ²⁴ 24. The spinal fusion implant of claim 1 having a longitudinal central axis and at least one truncated side forming a planar surface parallel to said central axis.
- ~~24~~ ²⁵ 25. The spinal fusion implant of claim 24 in which said external thread has a thread height measured from said body which is greatest at said truncated side.
- ~~25~~ ²⁶ 26. A frusto-conical interbody spinal fusion implant, comprising:
a body having an insertion end, a trailing end and an outer surface; and
an external thread for engaging said implant to adjacent vertebrae of the spine, the locus of said external thread forming a substantially cylindrical configuration, said implant being made of a material appropriate for human implantation.
- ~~26~~ ²⁷ 27. The implant of claim 26 in which said body has a substantially frusto-conical configuration.
- ~~27~~ ²⁸ 28. The implant of claim 26 in which said body has at least in

part a cylindrical configuration.

~~28~~²⁹ 29. The spinal fusion implant of claim 26 in which said trailing end is larger than said insertion end.

~~29~~³⁰ 30. The spinal fusion implant of claim 26 in which said insertion end is larger than said trailing end.

~~30~~³¹ 31. The spinal fusion implant of claim 26 in which said implant comprises a bone ingrowth material.

~~31~~³² 32. The spinal fusion implant of claim 26 in which said implant comprises a fusion promoting material.

~~32~~³³ 33. The spinal fusion implant of claim 26 in which said implant is at least in part bioabsorbable.

~~33~~³⁴ 34. The spinal fusion implant of claim 26 having a plurality of openings capable retaining fusion promoting material.

~~34~~³⁵ 35. The spinal fusion implant of claim 26 in which said external thread has a thread radius measured from the longitudinal central axis of said implant, said thread radius being substantially uniform throughout the length of said implant.

²⁰
~~35~~³⁶ 36. The spinal fusion implant of claim 26 in which said external thread has a thread radius measured from the longitudinal central axis of said implant, said thread radius being variable along at least a portion of said implant.

~~36~~³⁷ 37. The spinal fusion implant of claim 26 in which said external thread has a thread height measured from said body which is variable along the length of said implant.

~~37~~³⁸ 38. The spinal fusion implant of claim 26 in which said external

thread has a thread height measured from said body which is substantially constant along at least a portion of said implant.

~~38~~ 39. The spinal fusion implant of claim 26 in which said outer surface is porous at least in part.

~~39~~ 40. The spinal fusion implant of claim 26 in which said implant has an internal chamber and an access opening for accessing said internal chamber.

~~40~~ 41. The spinal fusion implant of claim 26 in which said internal chamber is capable of containing fusion promoting material.

~~41~~ 42. The spinal fusion implant of claim 40 in which said implant comprises a wall surrounding said internal chamber.

~~42~~ 43. The spinal fusion implant of claim 40 in which said wall has a plurality of openings passing therethrough in communication with said internal chamber.

~~43~~ 44. The spinal fusion implant of claim 40 in which said implant has means for closing said access opening.

~~44~~ 45. The spinal fusion implant of claim 26 in which one of said ends of said implant includes an engagement means for engaging instrumentation for the insertion of said implant.

~~45~~ 46. The spinal fusion implant of claim 26 in which at least a portion of said outer surface comprises wells having at least partial walls.

~~46~~ 47. The spinal fusion implant of claim 26 in which said implant is configured to be placed in close proximity in a side by side alignment to a second spinal fusion implant, said first and second implants when placed together having a combined overall width that

is less than the sum of the individual maximum diameters of each of said first and second implants.

⁴⁸
~~47~~ 48. The spinal fusion implant of claim 26 having a longitudinal central axis and at least one truncated side forming a planar surface parallel to said central axis.

⁴⁹
~~48~~ 49. The spinal fusion implant of claim 48 in which said external thread has a thread height measured from said body which is greatest at said truncated side.

~~49~~ 50. An interbody spinal fusion implant, comprising:
a body having a substantially cylindrical configuration, an insertion end, a trailing end and an outer surface; and
an external thread for engaging said implant to adjacent vertebrae of the spine, the locus of said external thread forming a substantially cylindrical configuration, said implant being made of a material appropriate for human implantation.

~~50~~ 51. The spinal fusion implant of claim 50 in which said implant comprises a bone ingrowth material.

~~51~~ 52. The spinal fusion implant of claim 50 in which said implant comprises a fusion promoting material.

~~52~~ 53. The spinal fusion implant of claim 50 in which said implant is at least in part bioabsorbable

~~53~~ 54. The spinal fusion implant of claim 50 having a plurality of openings capable retaining fusion promoting material.

~~54~~ 55. The spinal fusion implant of claim 50 in which said external thread has a thread radius measured from the longitudinal central axis of said implant, said thread radius being substantially uniform for at least a portion of said implant.

- ~~56.~~ The spinal fusion implant of claim 50 in which said external thread has a thread radius measured from the longitudinal central axis of said implant, said thread radius being variable along at least a portion of said implant.
- ~~57.~~ The spinal fusion implant of claim 50 in which said external thread has a thread height measured from said body which is variable along at least a portion of said implant.
- ~~58.~~ The spinal fusion implant of claim 50 in which said external thread has a thread height measured from said body which is substantially constant along the length of said implant.
- ~~59.~~ The spinal fusion implant of claim 51 in which said outer surface is porous at least in part.
- ~~60.~~ The spinal fusion implant of claim 51 in which said implant has an internal chamber and an access opening for accessing said internal chamber.
- ~~61.~~ The spinal fusion implant of claim 60 in which said internal chamber is capable of containing fusion promoting material.
- ~~62.~~ The spinal fusion implant of claim 60 in which said implant comprises a wall surrounding said internal chamber.
- ~~63.~~ The spinal fusion implant of claim 60 in which said wall has a plurality of openings passing therethrough in communication with said internal chamber.
- ~~64.~~ The spinal fusion implant of claim 60 in which said implant has means for closing said access opening.
- ~~65.~~ The spinal fusion implant of claim 51 in which one of said ends of said implant includes an engagement means for engaging

instrumentation for the insertion of said implant.

~~65~~ ⁶⁶ 66. The spinal fusion implant of claim 51 in which at least a portion of said outer surface comprises wells having at least partial walls.

~~66~~ ⁶⁷ 67. The spinal fusion implant of claim 51 in which said implant is configured to be placed in close proximity in a side by side alignment to a second spinal fusion implant, said first and second implants when placed together having a combined overall width that is less than the sum of the individual maximum diameters of each of said first and second implants.

~~67~~ ⁶⁸ 68. The spinal fusion implant of claim 51 having a longitudinal central axis and at least one truncated side forming a planar surface parallel to said central axis.

~~68~~ ⁶⁹ 69. The spinal fusion implant of claim 68 in which said external thread has a thread height measured from said body which is greatest at said truncated side.

~~69~~ ⁷⁰ 70. A frusto-conical interbody spinal fusion implant, comprising:
a body having a substantially frusto-conical configuration, an insertion end, a trailing end and an outer surface; and
an external thread for engaging said implant to adjacent vertebrae of the spine, said implant being made of a material appropriate for human implantation.

~~70~~ ⁷¹ 71. The implant of claim 70 in which said the outer locus of said external thread forms a substantially cylindrical configuration.

~~71~~ ⁷² 72. The spinal fusion implant of claim 70 in which said insertion end is larger than said trailing end.

~~72~~ ⁷³ 73. The spinal fusion implant of claim 72 in which said insertion

end comprises a tapered leading portion.

- ~~73~~ 74. The spinal fusion implant of claim 70 in which said trailing end is larger than said insertion end.
- ~~74~~ 75. The spinal fusion implant of claim 70 in which said implant comprises a bone ingrowth material.
- ~~75~~ 76. The spinal fusion implant of claim 70 in which said implant comprises a fusion promoting material.
- ~~76~~ 77. The spinal fusion implant of claim 70 in which said implant is at least in part bioabsorbable.
- ~~77~~ 78. The spinal fusion implant of claim 70 having a plurality of openings capable retaining fusion promoting material.
- ~~78~~ 79. The spinal fusion implant of claim 70 in which said external thread has a thread radius measured from the longitudinal central axis of said implant, said thread radius being substantially uniform throughout the length of said implant.
- ~~79~~ 80. The spinal fusion implant of claim 70 in which said external thread has a thread radius measured from the longitudinal central axis of said implant, said thread radius being variable along the length of said implant.
- ~~80~~ 81. The spinal fusion implant of claim 70 in which said external thread has a thread height measured from said body which is variable along the length of said implant.
- ~~81~~ 82. The spinal fusion implant of claim 70 in which said external thread has a thread height measured from said body which is substantially constant along the length of said implant.

- ~~82~~ 83. The spinal fusion implant of claim 70 in which said outer surface is porous at least in part.
- ~~83~~ 84. The spinal fusion implant of claim 70 in which said implant has an internal chamber and an access opening for accessing said internal chamber.
- ~~84~~ 85. The spinal fusion implant of claim 84 in which said internal chamber is capable of containing fusion promoting material.
- ~~85~~ 86. The spinal fusion implant of claim 84 in which said implant comprises a wall surrounding said internal chamber.
- ~~86~~ 87. The spinal fusion implant of claim 84 in which said wall has a plurality of openings passing therethrough in communication with said internal chamber.
- ~~87~~ 88. The spinal fusion implant of claim 84 in which said implant has means for closing said access opening.
- ~~88~~ 89. The spinal fusion implant of claim 70 in which one of said ends of said implant includes an engagement means for engaging instrumentation for the insertion of said implant.
- ~~89~~ 90. The spinal fusion implant of claim 70 in which at least a portion of said outer surface comprises wells having at least partial walls.
- ^{NJ}
~~90~~ 91. The spinal fusion implant of claim 70 in which said implant is configured to be placed in close proximity in a side by side alignment to a second spinal fusion implant, said first and second implants when placed together having a combined overall width that is less than the sum of the individual maximum diameters of each of said first and second implants.

^{NO} 91 ~~92~~. The spinal fusion implant of claim 70 having a longitudinal central axis and at least one truncated side forming a planar surface parallel to said central axis.

^{NO} 92 ~~93~~. The spinal fusion implant of claim 92 in which said external thread has a thread height measured from said body which is greatest at said truncated side.

^{Sub B77}
⁹³ ~~94~~. The spinal fusion implant of claim 1 in which said implant has an upper and lower portion for engaging the bone of the adjacent vertebrae, said upper and lower surfaces comprising a plurality of macroscopic openings.

⁹⁴ ~~95~~. The spinal fusion implant of claim 26 in which said implant has an upper and lower portion for engaging the bone of the adjacent vertebrae, said upper and lower surfaces comprising a plurality of macroscopic openings.

⁹⁵ ~~96~~. The spinal fusion implant of claim 50 in which said implant has an upper and lower portion for engaging the bone of the adjacent vertebrae, said upper and lower surfaces comprising a plurality of macroscopic openings.

⁹⁶ ~~97~~. The spinal fusion implant of claim 70 in which said implant has an upper and lower portion for engaging the bone of the adjacent vertebrae, said upper and lower surfaces comprising a plurality of macroscopic openings.

⁹⁷ ~~98~~. The spinal fusion implant of claim 24 in which said external thread is continuous over at least a portion of said truncated side.

Add B87 add